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PATENT
Docket No. 10247US01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

OFFICIAL

In re Application of:

DONALD J. KERFELD, TERRY L. MORKVED and ROBERT F. HELLEN

Examiner: Nikolas J. Uhlir

Serial No.: 09/730,199

Group Art Unit: 1773

Filed: December 5, 2000

For: DATA STORAGE MEDIA

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Dear Sir:

I certify that the following pages are being telefacsimile transmitted to the U.S. Patent and Trademark Office on the date shown below:

1. Response entitled "In Response to the Final Office Action," including Certificate of Facsimile (11 pages)

Respectfully submitted,

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RESPONSE UNDER 37 C.F.R. 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 1773

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Donald J. Kerfeld; Terry L. Morkved; Robert F. Hellen	Confirmation No.	7264
Serial No.:	09/730,199		
Filed:	December 5, 2000		
Examiner:	Nikolas J. Uhlir		
Group Art Unit:	1773		
Docket No.:	10247US01		
Title:	*DATA STORAGE MEDIA*		

CERTIFICATE UNDER 37 CFR 1.8 I hereby certify that this correspondence is being transmitted via facsimile to the United States Patent and Trademark Office on 12/1, 2003.

By: Eric Levinson
Name: Eric D. Levinson

IN RESPONSE TO THE FINAL OFFICE ACTION

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Alexandria, VA 22313-1450

Dear Sir:

In response to the Office Action mailed October 3, 2003, the period of response for which runs through December 3, 2003, Applicants provide the following remarks.

REMARKS

In this response, Applicants have not amended any claims. Claims 1, 3-17 and 20-32 are still pending.

The Prior Art Lacks a Motivation to Combine the Teaching of Lewis and Davis because Lewis Specifically Teaches Against the Combination Proposed by the Examiner

Applicants again traverse the pending rejections for the reasons outlined in the Amendment and Response filed July 15, 2003. In particular, Applicants hereby reiterate all arguments made in the Response filed July 15, 2003, and incorporate the arguments herein by reference. In further response to the pending Office Action of October 3, 2003, Applicants provide the following additional comments.

Claim 1 recites a data storage medium comprising a first layer comprising a substrate, a second layer including a polymer, the second layer exhibiting surface variations, and a third layer including a magnetic recording material and substantially conforming to the surface variations of the second layer. Similarly, all pending independent claims recite at least these features.

In the first Office Action mailed April 16, 2003, the Examiner rejected the features currently recited in claim 1 under 35 U.S.C. §103(a) based on the combined teaching of Lewis and Davis. Applicants responded to the rejections of April 16, 2003 by illustrating that prior art lacks a motivation to combine the teaching of Lewis and Davis. In particular, Applicants pointed out that substituting a magnetic layer as taught by Davis for a metallized layer, such as a reflective or conductive layer, taught by Lewis would frustrate the goals of Lewis. For this reason, a person with skill in the art would not have been motivated to make the substitution. In the current Office Action, however, the Examiner has maintained many of the pending rejections under 35 U.S.C. §103.

The pending rejections, however, cannot withstand legal scrutiny. The combination of the teaching of Davis with the teaching of Lewis to arrive at Applicants' claimed features would clearly frustrate the goals of Lewis. As a matter of law, the Examiner cannot maintain that a person with skill in the art would have been motivated to substitute magnetic layers described in Davis for the metallized layer of Lewis, when doing so would clearly undermine the goals of Lewis.

Lewis requires the metallized layer to be embossable. See column 4, lines 49-50. Moreover, the fact that it is an *optical* media taught in Lewis implies that the metallized layer of that media must be reflective. Magnetic layers are generally not embossable or reflective. For

each of these reasons, a person with ordinary skill in the art would not make the substitution proposed by the Examiner without access to Applicants' disclosure.

Contrary to the teaching of Lewis, magnetic layers described in Davis are generally non-reflective. Accordingly, if one substituted magnetic layers described in Davis for the metallized layer of Lewis, the optical described by Lewis would not be realized. Accordingly, Lewis teaches against the combination proposed by the Examiner.

Moreover, a person of ordinary skill in the art would recognize that a magnetic layer is generally not an embossable layer, as *required* by Lewis. See column 4, lines 49-50. Thus, viewing the teachings and objectives of Lewis, a person with ordinary skill in the art would have consciously avoided the substitution proposed by the Examiner. For these reasons, the pending rejections cannot withstand legal scrutiny.

In the current Office Action, the Examiner stated that:

> Davis **clearly** establishes the equivalence of reflective layers, magnetic layers, and magneto-optic layers as suitable metal layers for storing encoded data. The applicant argues that the mere recitation of these layers as alternatives does not make them equivalent. The examiner agrees that these layers are "not the same" and do not function in the same manner. However, for the purpose of recording encoded data, the prior art clearly recognizes the equivalency of these layers. Given that Lewis teaches that the information recording discs are suitable for computer retrieval systems, and given the fact that magnetic, optic, and magneto-optic media are well established as suitable for use in computer based storage retrieval, one of ordinary skill in the art would have been motivated to modify the structure of Lewis with the teaching of Davis to arrive at the instantly claimed invention, and would have had a reasonable expectation of success in doing so.

Applicants respectfully submit that this statement by the Examiner is fraught with mischaracterizations of the prior art teachings, and contrived statements of motivation. The only motivation to arrive at Applicants claimed invention is in Applicants' own disclosure, rather than Lewis or Davis.

A substitution of magnetic layers described in Davis for the radiation conductive or reflective layer of Lewis, as proposed by the Examiner, would quite simply frustrate the teaching of Lewis. For this reason alone, the Examiner simply cannot show that a person with ordinary skill in the art would have been motivated to substitute magnetic layers described in Davis for the radiation conductive reflective layer of Lewis.

Put another way, Lewis specifically teaches against the substitution of magnetic layers for metallized layers. For one thing, magnetic layers are typically not reflective. Accordingly, if one substituted magnetic layers described in Davis for the radiation conductive reflective layer of Lewis, the optical media disclosed by Lewis would simply not be realized. A person with skill in the art would, reading Lewis, not make a substitution of magnetic layers for metallized layers because Lewis describes optical media and such a substitution undermines the creation of such optical media.

Moreover, a person of ordinary skill in the art would recognize that a magnetic layer is generally not an embossable layer, as *required* by Lewis. See column 4, lines 49-50. For this additional reason, a person with ordinary skill in the art at the time of the invention would not have been motivated to substitute magnetic layers described in Davis for the radiation conductive or reflective layer of Lewis. In other words, a person with skill in the art would, reading Lewis, not make a substitution of magnetic layers for metallized layers because Lewis requires that the metallized layer be embossable and magnetic layers are generally not embossable.

The Examiner's statement that "Davis clearly establishes the equivalence of reflective layers, magnetic layers, and magneto-optic layers as suitable metal layers for storing encoded data" is a mischaracterization of the prior art. Davis very basically discloses reflective layers, magnetic layers, and magneto-optic layers for different types of media. However, nothing in Davis suggests that magnetic layers could be substituted for reflective layers in an optical media like that disclosed in Lewis. The Examiner is clearly using Applicants' claims as a blueprint to reconstruct the features of Applicants' claims. Without access to Applicants' disclosure, a person with skill in the art would have considered the teaching of Davis and Lewis to be completely unrelated.

Moreover, Lewis clearly teaches against the modifications proposed by the Examiner insofar as the modification of Lewis proposed by the Examiner would frustrate the goals of Lewis. For this reason, the Examiner simply cannot show that a person with ordinary skill in the art would have been motivated to substitute of magnetic layers described in Davis for the radiation conductive reflective layer of Lewis.

At the same time, Davis also lacks any teaching that would have led a person with ordinary skill in the art to modify the teaching of Lewis. For example, Davis does not disclose or

suggest media having surface variations formed in a second layer and preserved in a third layer. See e.g., the FIGS of Davis. In particular, Davis does not disclose or suggest a third layer that substantially conforms to surface variations of a second layer, much less a third layer including magnetic recording material that substantially conforms to the surface variations of the second layer, as recited in Applicants' claims. Insofar as Davis discloses a magnetic layer, it is clear that the magnetic layer does not substantially conform to surface variations of another layer. See e.g., the FIGS. of Davis. Davis appears to be nothing more than a conglomeration of unrelated teachings for media, e.g., optical media, magnetic media and magneto-optic media.

Nothing in Davis would have motivated a person with skill in the art to modify the teaching of Lewis by substituting a metal layer of Lewis with a magnetic layer. Not only would such a substitution be contrary and inconsistent with the teaching of Lewis, but Davis provides no teaching that would have led a person with skill in the art to substitute a magnetic layer for a metal layer in an optical medium such as that disclosed in Lewis. The Examiner is simply plucking features from unrelated prior art references to reconstruct Applicants' claimed invention.

In the passage cited above, the Examiner stated "one of ordinary skill in the art would have been motivated to modify the structure of Lewis with the teaching of Davis to arrive at the instantly claimed invention, and would have had a reasonable expectation of success in doing so." However, Applicants are unsure what "reasonable expectation" the Examiner thinks a person with skill in the art would have contemplated from reading Lewis and Davis. The only reasonable expectation that a person with skill in the art would have gleaned from the teaching of Lewis and Davis is the substitution of metal layers of Lewis with magnetic layers of Davis would make the goals of Lewis unattainable, i.e., an embossable and reflective medium would not be realized. For this reason, a person with skill in the art would not have made the substitution proposed by the Examiner, without access to Applicants' disclosure.

With respect to claims 3-17 and 20-32, numerous other differences exist relative to the applied references. In Applicants' response filed July 15, 2003, Applicants also pointed out a number of other deficiencies of the prior art vis-à-vis Applicants' dependent claims and other more narrow independent claims. Applicants hereby reiterate the positions put forward in the Response filed July 15, 2003, with respect to Applicants' dependent claims and other more narrow independent claims.

For example, with respect to claims 24 and 25, the Examiner acknowledged that Lewis does not teach the use of a lubrication layer that substantially conforms to the surface variations. However, the Examiner indicated that it would have been obvious to deposit a lubrication layer disclosed in Davis on the medium described in Lewis.

As already stated on the record, Applicants are unsure what the function the Examiner thinks a lubrication layer described in Davis would serve on the medium described in Lewis. Applicants have already posed this question, but received no response from the Examiner. The media described in Lewis is optical media read via radiation. A person with ordinary skill in the art would have had no reason to deposit a lubrication layer on the medium described in Lewis. Application of a lubrication layer over a layer of an optical medium would simply be nonsensical.

The Examiner indicated that one would have been motivated to make this combination due to the increased slipperiness/abrasion resistance of the surface. See paragraph 42 of Office Action. The Examiner failed, however, to indicate why a person would have been motivated to make an optical medium, as disclosed in Lewis, slippery and abrasively resistant, considering the fact that such optical medium does not physically interact with a head.

The mere fact that adding lubrication increases the slipperiness/abrasion resistance of the surface begs the question of why a person with ordinary skill in the art would have been motivated to increase the slipperiness/abrasion resistance of an optical medium, such as that disclosed in Lewis. The Examiner has identified nothing in the applied references that would have led a person with ordinary skill in the art to add a lubrication layer to a medium like that disclosed in Lewis.

Moreover, Davis does not describe media that includes surface variations, much less media that includes surface variations formed in a polymer layer, a magnetic layer that substantially conforms to the surface variations, and a lubrication layer that also substantially conforms to the surface variations. Applicants' disclosure is the only reference of record that discloses or suggests such features. The Examiner has merely reconstructed Applicants' claimed invention in a manner that contradicts the teaching of the primary reference, Lewis.

Dependent claims 20 and 21 and independent claims 27-30 recite a thin film stack comprising a plurality of sub-layers, including a magnetic recording material, and substantially

conforming to the surface variations. Nothing in the applied references discloses or suggests these features, particularly in the context of layers that substantially conform to surface variations.

The Examiner is taking the position that a metal layer, a magneto-optic layer, and a protective layer pieced together from the teaching of Lewis and Davis are equivalent to Applicants' claimed stack. See paragraph 44 of Office Action. A person with ordinary skill in the art, however, would recognize that a thin film stack comprising a plurality of sub-layers is nothing akin to the ad-hoc combination of layers of Lewis and Davis proposed by the Examiner. No fair interpretation of a thin film stack would purport to be equivalent to the ad-hoc combination of layers of Lewis and Davis proposed by the Examiner. A thin film stack is well known in the art to refer to a combination of sub-layers that collectively provide a magnetic recording surface to the medium.

With respect to claims 20, 21, and 27-30 which recite a thin film stack, the Examiner is not only combining the teaching of Lewis and Davis in a manner that contradicts the teaching of Lewis, but is then characterizing the resultant ad-hoc combination of layers of Lewis and Davis as being a thin film stack. Even if a person substituted a magnetic layer disclosed in Davis with a metallized layer of Lewis, or made some other illogical ad hoc combination of the layers of Davis and Lewis, a thin film stack would not somehow appear. A thin film stack is commonly known in the art to describe a combination of sub-layers that collectively provide a magnetic recording surface to the medium. The rejections of claims 20, 21, and 27-30 should be withdrawn for these additional reasons.

Claim 21 requires that the underlayer include a chrome alloy and the magnetic recording material include a cobalt alloy. In rejecting claim 21, the Examiner stated that "Lewis teaches that the metal reflective layer can comprise Al, Cr, Fe, Sn, In, Ag, Au and alloys thereof," and rejected claim 21 on this basis. In the Examiner's foregoing analysis, however, the Examiner stated that a person with skill in the art would have substituted the metal reflective layer of Lewis with a magnetic recording layer of Davis. Thus, the metal layer of Lewis is no longer present in the hypothetical medium that the Examiner reconstructed from the prior art to reject Applicants' claim 1. With respect to claim 21, the Examiner appears to be stating that the person with skill in the art would have then substituted back to the metallized layer of Lewis. If this were done, claim 1 is no longer constructed from the prior art.

With regard to claim 21, the Examiner is substituting layers of Davis for layers of Lewis only when it suits the Examiner's goal, and then substituting back to the layers of Lewis when the Examiner wants to reject Applicants' claims. A person with ordinary skill in the art would not make the substitution of layers of Davis for the layer of Lewis in the first place, as outlined above. Moreover, if a person with ordinary skill in the art did make the substitution proposed by the Examiner, the person would never substitute back to the layer of Lewis. The only reason for doing so seems to be the Examiner's goal of rejecting Applicants' claims. Claim 21 is a clear situation where the Examiner is using Applicants' claims as a blueprint to pick and choose unrelated features from the prior art.

Claim 31 is directed to a removable hard disk unit, and claim 32 is directed to a system that includes a flying head transducer in addition to many of the features addressed above. In rejecting claims 31 and 32, the Examiner argued that a person with ordinary skill in the art would have been motivated to modify optical video disks of Lewis with a magnetic layer disclosed in Davis. The Examiner apparently thinks that such a modification of an optical medium disclosed in Lewis with a magnetic layer disclosed in Davis would result in a magnetic hard disk. The Examiner then argued that a person with ordinary skill in the art would have been motivated to use a magnetic transducer, as disclosed in Smith to read the "magnetic hard disk" created from combined teaching of Lewis and Davis.

As already stated on the record, these rejections are clearly inappropriate. For one thing, modification of Lewis with the teaching of Davis would not realize a magnetic hard disk. Lewis is completely unrelated to magnetic hard disks, and is instead focused on optical media. Moreover, as outlined above, the proposed modification of Lewis with the teaching of Davis would frustrate the teaching of Lewis by substituting a magnetic layer for the embossable reflective or conductive layer that is specifically required by Lewis. Column 4, line 50.

With a vast abundance of magnetic hard disks available at the time of invention, it is unclear why one of ordinary skill in the art would consider it productive to explore modifications to optical video disks for the purpose of realizing magnetic hard disks, as proposed by the Examiner. Quite the contrary, one of ordinary skill in the art would have considered such modificati ns proposed by the Examiner to be nonsensical.

Furthermore, the use of the magnetic transducer, as described in Smith, would further frustrate the teaching of Lewis insofar as Lewis is concerned and directed to optical media which are read via radiation. Magnetic transducers, in contrast, typically do not use radiation to read magnetically stored data. There is clearly a lack of motivation for the modification of Lewis with the teaching of Davis, and also a lack of motivation for the further modification of Lewis with the teaching of Smith. For example, as outlined above, such modifications would clearly frustrate the teaching of Lewis. Moreover, even assuming that the modifications would not frustrate the teaching of Lewis, it is unclear whether one of ordinary skill in the art could even obtain a magnetic hard disk via the combined teaching of Lewis, Davis and Smith, much less a disk having surface variations in a second layer and a third layer including magnetic recording material and substantially conforming to the surface variations of the second layer. The Examiner's rejections rely on mere contrivance in view of Applicants' own disclosure.

Applicants also point out that the arguments presented above with respect to claims 31 and 32 have already been presented in the response filed July 15, 2003, with no response from the Examiner in the current Office Action. With respect to claims 31 and 32, the Examiner seems to have completely ignored Applicants' arguments, and simply restated the rejections from the first Office Action. In the response filed July 15, 2003, Applicants clearly shifted the burden of proof back to the Examiner with respect to claims 31 and 32, and therefore, the Examiner must either respond to Applicants' arguments with respect to claims 31 and 32, or allow the claims.

With respect to the rejection of claim 28, which is improper for one or more of the reasons outlined above, Applicants further point out that the substrate is recited as a "flexible contact media substrate." The Examiner argued that "any substrate can be construed as flexible to some degree," and rejected this claim with no additional analysis. Claim 28, however, recites a "flexible *contact media substrate*." Lewis is directed to optical media, which do not include a contact media substrate. Moreover, the Examiner's proposed modification of Lewis to somehow morph the optical medium into a magnetic medium or contact medium is clearly illogical. Lewis is directed to optical media, and not contact media.

With respect to the rejection of claim 26, Applicants traverse the Examiner's position. The Examiner is arguing that the structur of Lewis modified by Davis would be a flyable surface. A flyable surface is well known in the art of hard disks and other magnetic media, and well

defined in Applicants' specification. See page 1, lines 16-25. Nothing in either Lewis or Davis discloses or suggests the creation of a flyable surface, and the Examiner's conclusory statements are inadequate, as a matter of law, to support a prima facie case of obviousness.

With respect to claim 26, the Examiner seems to be trying to place the burden of proof on the Applicants, stating: "absent a showing otherwise, the Examiner maintains that the structure of Lewis modified by Davis has at least on flyable surface." However, nothing in either Lewis or Davis discloses or suggests the creation of a flyable surface. The Examiner has not met the burden of proof with respect to this limitation. The Examiner cannot shift the burden of proof without showing that the prior art discloses or suggests a flyable surface in the context of the other feature of Applicants' claims. Absent a teaching of flyability in the applied references, the Examiner cannot presume that some ad hoc combination of features would result in a flyable surface. Indeed, embossed features of Lewis would seem to teach against flyability, absent some teaching in Lewis to the contrary.

Claim 29 recites data storage medium comprising a substantially transparent plastic substrate including optically detectable features, a reflective layer to facilitate optical detection of the optically detectable features via reflection of an optical signal, a polymer containing surface variations, a thin film stack comprising a plurality of sub-layers, including a magnetic recording material, and substantially conforming to the surface variations, and a lubrication layer substantially conforming to the surface variations, wherein the surface variations are arranged in a machine-readable pattern.

Claim 29 includes several of the features addressed above. In addition, claim 29 further recites that the substrate includes optically detectable features. With respect to claim 29, the Examiner is taking the position that a substrate having a polymer coating layer with surface variations (as recited in claim 20) is considered to be equivalent to claim 29. This position is indefensible. Claim 29 recites both a polymer containing surface variations and substrate which includes optically detectable features. These elements are not the same, but distinct elements of the medium claimed in claim 29.

Also, with respect to claim 29, the Examiner is again making reference to the metal reflective layer of Lewis. In particular, the Examiner is stating that the metal reflective layer of Lewis is considered equivalent to the reflective layer recited in claim 29. In the Examiner's basic

analysis, however, the Examiner has stated that a person with skill in the art would have substituted the metal reflective layer of Lewis with a magnetic recording layer of Davis. Thus the metal layer of Lewis is no longer present in the hypothetical medium that the Examiner reconstructed from the prior art to reject Applicants' claims.

As discussed above with respect to claim 21, a person with ordinary skill in the art would not make one substitution and then revert back to the original layer. The only reason for doing so seems to be the Examiner's goal of rejecting Applicants' claims. Claim 29 is another clear case of the Examiner using Applicants' claims as a blueprint to pick and choose unrelated features from the prior art.

In conclusion, all of Applicants' independent claims recite a medium formed with surface variations that are preserved through various layers of the medium. In particular, a second layer of the medium is formed with the surface variations. As claimed, the second layer includes a polymer, which allows such surface variations to be created with ease. Applicants' independent claims also recite a third layer that includes a magnetic recording material and substantially conforms to the surface variations. In this manner, the third layer can preserve any information or data encoded in the surface variations, while also allowing for magnetic recording on the medium. In other words, the surface variations are preserved through the layers insofar as the layers substantially conform to the surface variations. A number of dependent features of Applicants' dependent claims and more narrow independent claims are also not disclosed or suggested in the Applied references, as outlined above.

All claims in this application are in condition for allowance. Applicants respectfully request reconsideration and prompt allowance of all pending claims. Please charge any additional fees or credit any overpayment to deposit account number 09-0069. The Examiner is invited to telephone the below-signed attorney to discuss this application.

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